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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Application Number	09/760,384		\dot{z}	7
Filing Date	January 11, 2001		117	7
First Named Inventor	DUONG		7	42
Group Art Unit	1645	Lì	<i>y</i> 8)
Examiner Name	Not Yet Assigned	4	AC	į

A-68718-2/RFT/RMS/RMK

				U.S. PATENT DOCI	JMENTS	2
Examiner Initials*			Name of Patentee or Applicant of Cited Document	Date of Publication of	Pages, Columns, Lines, Where Relevant	
initials		Number	Kind Code ² (if known)	of cited Document	Cited Document MM-DD-YYYY	Passages or Relevant Figures Appear
1011	1	4,882,013		Turner et al.	11/1989	
434	2	4,964,972		Sagiv et al.	10/1990	
TEN	3	5,064,618		Baker et al.	11/1991	RECEIVE
701	4	5,505,321		Caron et al.	04/1996	
1271	5	5,066,372		Weetall	11/1991	AUG 2 3 2002
1344	6	5,519,635		Miyake et al.	05/1996	2002
551/5	7	5,622,821		Selvin et al.	04/1997	TC 1700
1811	8	5,650,061		Kuhr et al.	07/1997	10 11 9 -
4214	9	5,694,932		Michel	12/1997	
101	10	5,705,346		Okamoto et al.	01/1998	
BI	11	5,727,548		Hill et al.	03/1998	
704,	12	5,728,532	*	Ackley	03/1998	
436	13	5,976,802		Ansorge et al.	11/1999	
B 1.	14	6,090,933		Kayyem et al.	07/2000	
744	15	6,114,122		Besmer et al.	09/2000	
YOU	16	6,153,737		Manoharan et al.	11/2000	
480	17	6,197,515		Bamdad et al.	03/2001	
W.	18	6,203,758	B1	Marks et al.	03/2001	
OBU.	19	6,207,369	B1	Wohlstadter et al.	03/2001	
YOU	20	6,221,583		Kayyem et al.	04/2001	

					FOREIGN PATENT DOCUMEN	NTS		
Examiner Initials*	cr Cite For		Patent Document Kind C	a daž	Name of Patentee of Applicant	Date of Publication of Cited Document	Pages, Columns, Lines, Where Relevant	76
21		Office3	Number ⁴ (if know		of Cited Document	ocument Cited Document Passages or R MM-DD-YYYY Figures Ap		Ŀ
YOU .	21	wo	90/05303	Al	Pharmacia AB	05/1990		
gt.	22	wo	97/46568	A1	California Institute of Technology	12/1997		
M.	23	WO	98/31839	A2	Presidents and Fellows of Harvard College	07/1998		
10%	24	WO	98/57158		Clinical Micro Sensors	12/1998		
1011 .	25	wo	99/33559	A1	Cepheid	07/1999		
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Unique citation designation number. ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English Language Translation is attached.

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Application Number	09/760,384	12 C.
Filing Date	January 11, 2001	47.8
First Named Inventor	DUONG	$\mathcal{O}_{\mathcal{S}_{2}}$
Group Art Unit	1645	41 5 4
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Attorney Docket Number	A-68718-2/RFT/RMS/	RMK &

•				U.S. PATENT DOCU	JMENTS	*
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		Number Kind Code ² (if known)			Cited Document MM-DD-YYYY	Passages or Relevant Figures Appear
Y 14)	26	6,232,062		Kayyem et al.	05/2001	
18 9 110	27	6,258,545		Meade et al.	07/2001	<u></u>
1321	28	6,268,149		Meade et al	07/2001	RECEIVE
WI,	29	6,268,150		Meade et al.	07/2001	
Costs	30	6,277,576		Meade et al.	08/2001	AUG 2 3 2000
W.	31	6,300,141	Bl	Segal		2 3 2002
BUI	32	6,306,584		Bamdad	10/2001	TC 1700
SOM	33	6,322,979		Bamdad et al.	11/2001	10 1700
505L 1	34	20010034033	A1	Meade et al.	10/2001	
951	35	20010046679	A1	Meade et al.	11/2001	

0					FOREIGN PATENT DOCUMEN	VIS		
Examiner Initials*	Cite No.1	Foreign Office ³	Number ⁴	Kind Code ²	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	Т
70N.	36	WO	99/57317		Clinical Micro Sensors	11/1999		
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Application Number	09/760,384	7
Filing Date	January 11, 2001	4/2
First Named Inventor	DUONG	00
Group Art Unit	1645	41 8 5
Examiner Name	Not Yet Assigned	F & B
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Attorney Docket Number	A-68718-2/RFT/RMS/RMK	

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examine Initials*	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
	39, [Bain et al., "Formation of Monolayers by the Coadsorption of Thiols on Gold: Variation in the Length of	2
MY	6	the Alkyl Chain," J. Am. Chem. Soc. 111:7164-7175 (1989).	3
Mul ,	40,	Bamdad, C. "A DNA self-assembled monolayer for the specific attachment of unmodified double - or	1
TAL.	7	single stranded DNA," Biophysical Journal, 75:1997-2003 (1988).	<u>) [</u>
Uaky	41		<u>ا (</u>
(12) (1)	42/	Thara et al., "Gene sensor using ferrocenyl oligonucleotide," Chem. Commun., 1609-1610 (1997).	
W.T	43	Langen et al., "Electron Tunneling in Proteins: Coupling Through a βß Strand," Science, 268:1733-1735, 1995.	
KAH	44 !	McGee et al., "Novel Nucleosides via Intramolecular Functionalization of 2,2'-Anhydrouridine	
1891	J.	Derivatives," Tetrahedron Letters, 37(12) 1995-1998 (1996).	
- Y	45	Moffatt. "Chemical Transformations of the Sugar Moity of Nucleosides," Contribution No. 527 from the	
1911	×	institute of Organic Chemistry, Syntex Research, 71-103 (1979).	
02.1	461		
YOU .	U	Proc. Natl. Acad. Sci. USA, 93:9521-9526, 1996.	
7/21	47.	Strobel, S. A., et al., "Site-Specific Cleavage of a Yeast Chromosome by Oligonucleotide-Directed Triple-	
Mr.	V	Helix Formation," Science, 249:73-75 (1990).	
	48 ,	Yu et al. "Uridine-conjugated-ferrocene DNA oligonucleotides for electronic detection of nucleic acids,"	
1313	A,	Abstracts of Papers. ACS Ntational Meeting, 217(1): 76 (1999).	
90	49	Dontha et al., "Generation of Biotin/Avidin/Enzyme Nanostructures with Maskless Photolithography,"	
TGX .	+	Anal. Chem. 69:2619-2625 (1997).	
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Application Number 09/760,384						
Filing Date	January 11, 2001					
First Named Inventor	Duong, H.					
Group Art Unit	1645					
Examiner Name	Not Yet Assigned					
Attorney Docket Number	A-68718-2/RFT/RMS/RMK					

			U.S. PATENT DOC	UMENTS	
Examiner Initials*	Cite No.1	U.S. Patent Document Number Kind Code² (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
705	1	4,707,352	Stavrianopoulos	11/1987	
Cas	2	4,707,440	Stavrianopoulos	11/1987	
BL.	3	4,711,955	Ward et al.	12/1987	
GU.	4	4,755,458	Rabbani et al.	7/1988	
Joseph	5	4,840,893	Hill et al.	6/1989	
Bil.	6	4,849,513	Smith et al.	7/1989	
YU.	7	4,868,103	Stavrianopoulos et al.	9/1989	
1 11.	8	4,894,325	Englehardt et al.	1/1990	-
Est.	9	4,943,523	Stavrianopoulos	7/1990	
Per.	10	4,952,685	Stavrianopoulos	8/1990	-
984	11	4,994,373	Stavrianopoulos	2/1991	
Ford	12	5,002,885	Stavrianopoulos	3/1991	
4311	13	5,013,831	Stavrianopoulos	5/1991	
Sel	14	5,082,830	Brakel et al.	1/1992 .	
91	15	5,175,269	Stavrianopoulos	12/1992	
431	16	5,241,060	Englehardt et al.	8/1993	
Est.	17	5,278,043	Bannwarth et al.	1/1995	
GHI	18	5,312,527	Mikkelsen et al.	5/1994	

					FOREIGN PATENT DOCUMEN	NTS		
Examiner Initials*	Cite No.1	Forei Offic		Code ² nown)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	Τ°
81,8	19	EP	0 234 938	A2	Cranfield Inst. of Tech.	2/1987		
W.	20	EP	0 229 943	B1	Molecular Biosystems Inc.	7/1987		
ML, v	21	EP	0 599 337	A2	Canon Kabushiki Kaisha	1/1994		
12/	22	EP	0 063 879	A2	Yale University	11/1982		
	23	EP	0 515 615	1	Boehringer Nannheim	9/1996		
131. 3	24	CA	2 090 9041	A1	F. Hoffman-La Roche	9/1993		\Box
Med 1	25	JР	238,166	Α	Mitsubishi Corp.	1988	abstract	
101 .	26	JР	6-41183	A2	Mitsubishi Corp.	1994		\top

Examiner Signature	Date Considered	6/23/2003.	

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7	Complete if Known						
	Application Number	09/760,384					
	Filing Date	January 11, 2001					
	First Named Inventor	Duong, H.					
	Group Art Unit	1645					
	Examiner Name	Not Yet Assigned					
	Attorney Docket Number	A-68718-2/RFT/RMS/RMK					

				U.S. PATENT DOC	UMENTS	
Examiner Initials*	Cite No.1 Number Kind Code2 (if known)			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant
-Bal -	27	5,328,824	(I) KNOWN)	Ward et al.	7/1994	Figures Appear
400,	28	5,403,451	+	Riviello et al.	4/1995	
4/	29	5,449,767		Ward et al.	9/1995	
PM	30	5,472,881		Beebe et al.	12/1995	
·ML	31	5,476,928		Ward et al.	12/1995	
74	32	5,552,270		Khrapko et al.	9/1996	
W.	33	5,565,552		Magda et al.	10/1996	
31	34	5,573,906		Bannwarth et al.	11/1996	
	35	5,591,578		Meade et al.	1/1997	· · · · · · · · · · · · · · · · · · ·
4 1	36	5,595,908		Fawcett et al.	1/1997	- ···
Ø.	37	5,601,982		Sargent et al.	2/1997	
11/1	38	5,620,850		Bamdad et al.	4/1997	•
gn -	39	5,705,348		Meade et al.	1/1998	
	40	5,741,700		Ershov et al.	4/1998	
	41	5756,050		Ershov et al.	5/1998	
441/	42	5,770,369		Meade et al.	6/1998	
	43	5,770,721		Ershov et al.	6/1998	
811	44	5,776,672		Hashimoto et al.	7/1998	-

)						FOREIGN PATENT DOCUME	NTS		
Examiner Initials*		Cite No.1	Foreign Patent Document Kind Code ² Office ³ Number ⁴ (if known)			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	Té
TM	٥	45	wo	90/05732 \	_ A1	Columbia Univ.	5/1990		
701		46	wo	92/10757	Al	Boehringen Mannheim	6/1992		
101	•	47	WO	93/10267	A1	IGEN, Inc.	5/1993		
***	, «	48	wo	94/22889	A1	Cis Bio International	10/1994		
12/	, 4	49	WO	95/15971	A2	Calif. Inst. of Technology	6/1995		
40/	1.	50	WO	96/40712	A1	Calif. Inst. of Technology	12/1996		

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~ 0		Number	(if known)	0. 0.000 2000	MM-DD-YYYY	Passages or Relevant Figures Appear
fox)	51	5,780,234		Meade et al.	7/1998	
484	52	5,824,473		Meade et al.	10/1998	
1001	53	5,851,772		Mirzabekov et al.	12/1998	
tole	54	5,952,172		Meade et al.	9/1999	
181	55	4,945,045		Forrest et al.	07/1990	
WI	56	5,180,968		Bruckenstein et al.	01/1993	
4014	57	5,356,786		Heller et al.	10/1994	
14	58	5,391,272		O'Daly et al.	02/1995	
134	59	6,180,352		Meade et al.	01/2001	
1001	60	6,238,870		Meade et al.	05/2001	
044	61	6,200,761		Meade et al.	03/2001	
401	62	6,096,273		Kayyem et al.	08/2000	
4000	63	6,107,080		Lennox et al.	08/2000	
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	FOREIGN PATENT DOCUMENTS									
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121/0.	64	wo	97/01646	A2	Univ. of N. Carolina	1/1997				
	65	WO	97/44651	A1	AU Membrane and	11/1997				
441.	66	wo	97/27329.	A1	Univ. of Chicago	7/1997				
- L	67	wo	98/20162	A2	Clinical Micro Systems	5/1998				
10 ·	68	wo	98/27229	A1	Univ. of Chicago	6/1998				
404	69	wo	98/28444	A2	Univ. of Chicago	7/1998				
101.	70	wo	98/35232` \	A2	Univ. of N. Carolina	8/1998				
900	71	wo	98/57159	A1	Clinical Micro Systems	6/1997				
834,0	72	wo	99/67425.	A2	Clinical Micro Systems	12/1999				
BUI	73	WO	99/14596	A1	AB Sangtec Medical	3/1999				
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1014	74	4,704,193		Bowers et al.	11/1987	
12/4	75	5,089,112		Skotheim et al.	02/10992	
4014	76	5,436,161		Bergstrom et al.	07/1995	
1614	77	5,443,701		Willner et al.	08/1995	· · ·
104	78	5,242,828		Bergstrom et al.	09/1993	
1/4	79	5,795,453		Gilmartin	08/1998	
CALL	80	6,060,023		Maracas	05/2000	
<i>191</i> 3	81	6,060,327		Kœn	05/2000	-
1000	82	6,071,699		Meade et al.	06/2000	*
424	83	6,087,100		Meade et al.	07/2000	
721	84	6,177,250		Meade et al.	01/2001	
7210	85	4,787,963		MacConnell	11/1988	
9811	86	5,571,568		Ribi et al.	11/1996	
8314	87	5,632,957		Heller et al.	05/1997	
784	88	5,700,667		Marble et al.	12/1997	
704	89	5,837,859		Teoule et al.	11/1998	
1944	90	5,849,486		Heller et al.	12/1998	
YOK	91	6,096,825		Garnier	08/2000	
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Examiner	Cite No.1	Foreign	Patent Docum	ent		Name of Patentee or Applicant	Date of Publication of	Pages, Columns, Lines, Where Relevant	
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124 ·	92	wo	97/41425						
10000	93	WO	99/37819		A2	Clinical Micro Systems	07/1999		
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Filing Date	January 11, 2001
First Named Inventor	Duong, H.
Group Art Unit ,	1645
Examiner Name	Not Yet Assigned
Attorney Docket Number	Δ_68718-2/RFT/RMS/RMK

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, scrial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
Part.	101	Aizawa et al., "Integrated Molecular Systems for Biosensors," Sensors and Acuators B, B@\$ (Nos 1/3) Part 1:1-5 (March 1995).	
181	102	Albers et al., "Design of Novel Molecular Wires for Realizing Long-Distance Electron Transfer," Biochemistry and Bioenergetics, 42:25-33 (1997).	
BH	103	Alleman, K.S., et al., "Electrochemical Rectification at a Monolayer-Modified Electrode," <i>J. Phys. Chem.</i> , 100:17050-17058 (1996).	
194	104	Arkin et al. "Evidence for Photoelectron Transfer Through DNA Intercalation," <i>J. Inorganic Biochem. Abstracts</i> , 6th International Conference on Bioinorganic Chemistry, 51(1) & (2):526 (1993).	
173Ha	105	Barisci et al., "Conducting Polymer Sensors," TRIP, 4(9):307-311 (1996).	
<i>19</i> 33	106	Baum, R. M., "Views on Biological, Long-Range Electron Transfer Stir Debate," <i>C&EN</i> , pp 20-23 (1993).	
	107	Bechtold, R., et al., "Ruthenium-Modified Horse Heart Cytochrome c: Effect of pH and Ligation on the Rate of Intramolecular Electron Transfer between Ruthenium(II) and Heme(III)," J. Phys. Chem., 90(16):3800-3804 (1986).	
7016	108	Bidan, "Electroconducting conjugated polymers: new sensitive matrices to build up chemical or electrochemical sensors. A Review.," <i>Sensors and Actuators</i> , B6:45-56 (1992).	
Polo	109	Biotechnology and Genetics: Genetic Screening Integrated Circuit," <i>The Economist</i> (February 25-March 3, 1995).	
YOU	110	Blonder et al., "Three-dimensional Redox-Active layered Composites of Au-Au, Ag-Ag and Au-Ag Colloids," Chem. Commun. 1393-1394 (1998).	
	111	Boguslavsky, L. et al., "Applications of redox polymers in biosensors," <i>Solid State Ionics</i> , 60:189-197 (1993).	
By.	112	Bowler, B. E., et al., "Long-Range Electron Transfer in Donor (Spacer) Acceptor Molecules and Proteins," <i>Progress in Inorganic Chemistry: Bioinorganic Chemistry</i> , 38:259-322 (1990).	
1340	113	Brun, A. M., et al., "Photochemistry of Intercalated Quaternary Diazaaromatic Salts," <i>J. Am. Chem. Soc.</i> , 113:8153-8159 (1991).	
5200	114	Bumm, et al., "Are Single Molecular Wires Conducting?," Science 271:1705-1707 (1996).	
19/2	115	Cantor, C.R. et al., "Report on the Sequencing by Hybridization Workshop," <i>Genomics</i> , 13:1378-1383 (1992).	
1980	116	Carr et al., "Novel Electrochemical Sensors for Neutral Molecules," <i>Chem. Commun.</i> , 1649-1650 (1997).	
Tall	117	Carter et al., "Voltammetric Studies of the Interaction of Metal Chelates with DNA 2. Tris-Chelated Complexes of Cobalt(III) and Iron(II) with 10-Phenanthroline and 2,2'-Bipyridine," J. Am. Chem. Soc., 11:8901-8911 (1989).	

Date Considered Examiner Signature

^{*}EXAMINER: Anitial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initials	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T
Part I	118	Chang, I-Jy, et al., "High-Driving-Force Electron Transfer in Metalloproteins: Intramolecular Oxidation of Ferrocytochrome c by Ru(2,2'-bpy) ₂ (im)(His-33) ³⁺ ," <i>J. Am. Chem. Soc.</i> , 113:7056-7057 (1991).	
100	119	Chidsey, et al., "Coadsorption of Ferrocene-Terminated and Unsubstituted Alkanethiols on Gold" Electroactive Self-Assembled Monolayers," <i>J. Am. Chem. Soc.</i> , 112:4301-4306 (1990).	
	120	Chidsey, C.E.D., et al., "Free Energy and Temperature Dependence of Electron Transfer at the Metal Electrolyte Interface," <i>Science</i> , 251:919-922 (1991).	
BA	121	Chrisey, et al., "Covalent attachment of synthetic DNA to self-assembled monolayer films," <i>Nucleic Acids Research</i> , 24(15):3031-3039 (1996).	
ואשי	123	Clery, "DNA Goes Electric," Science, 267:1270 (1995).	
Valle	124	Commerce Business Daily Issue of September 26, 1996 PSA#1688.	
BA	125	Davis, L. M., et al., "Electron Donor Properties of the Antitumour Drug Amsacrine as Studied by Fluorescence Quenching of DNA-Bound	
AN .	126	Davis, L. M., et al., "Elements of biosensor construction," <i>Enzyme Microb. Technol.</i> 17:1030-1035 (1995).	
	127	Degani et al., "Direct Electrical Communication between Chemically Modified Enzymes and Metal Electrodes. 2. Methods for Bonding Electron-Transfer Relays to Glucose Oxidase and D-Amino-Acid Oxidase," J. Am. Chem. Soc. 110:2615-2620 (1988).	
92	128	Degani, Y., et al., "Electrical Communication between Redox Centers of Glucose Oxidase and Electrodes via Electrostatically and Covalently Bound Redox Polymers," <i>J. Am. Chem. Soc.</i> , 111:2357-2358 (1989).	
3	129	Degani, Y., et al., "Direct Electrical Communication between Chemically Modified Enzymes and Metal Electrodes. 1. Electron Transfer from Glucose Oxidase to Metal Electrodes via Electron Relays, Bound Covalently to the Enzyme," <i>J. Phys. Chem.</i> , 91(6):1285-1288 (1987).	
	130	Deinhammer, R.S., et al., "Electronchemical Oxidation of Amine-containing compounds: A Route to the Surface Modification of glassy carbon electrodes," <i>Langmuir</i> , 10:1306-1313 (1994).	
124.	131	Dreyer, G. B., et al., "Sequence-specific cleavage of single-stranded DNA: Oligodeoxynucleotide-EDTA·Fe(II)," <i>Proc. Natl. Acad. Sci. USA</i> , 82:968-972 (1985).	
101/4	132	Drobyshev, A. et al., "Sequence Analysis by Hybridization with Oligonucleotide Microchip: Identification of β-thalassemia Mutations," Gene, 188:45-52 (1997).	
M_0	133	Dubiley, S. et al., "Fractionation, phosphorylation and Ligation on Oligonucleotide Microchips to Enhance Sequencing by Hybridization," Nucleic Acids Research, 25(12):2259-2265 (1997).	
98X	134	Durham, B., et al., "Electron-Transfer Kinetics of Singly Labeled Ruthenium(II) Polypyridine Cytochrome c Derivatives," <i>Advances in Chemistry Series</i> , 226:181-193 (1990).	

Examiner Signature Date Considered 4/23/2003.

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Paro	135	Durham, B., et al., "Photoinduced Electron-Transfer Kinetics of Singly Labeled Ruthenium Bis(bipyridin) Dicarboxybipyridine Cytochrome c Derivatives," <i>Biochemistry</i> , 28:8659-8665 (1989).	
134	136	Elghanian et al., "Selective Colorimetric Detection of Polynucleotides Based on the Distance- Dependent Optical Properties of Gold Nanoparticles," Science, 277:1078-1081 (1997).	
BH.	137	Elias, H., et al., "Electron-Transfer Kinetics of Zn-Substituted Cytochrome c and Its Ru(NH ₃) ₃ (Histidine-33) Derivative," J. Am. Chem. Soc., 110:429-434 (1988).	
135	138	Farver, O., et al., "Long-range intramolecular electron transfer in azurins," <i>Proc. Natl. Acad. Sci. USA</i> , 86:6968-6972 (1989).	
BL	139	Fotin, A. et al., "Parallel Thermodynamic Analysis of Duplexes on Oligodeoxyribonucleotide Microchips," Nucleic Acids Research, 216(6):1515-1521 (1998).	
9014	140	Fox, M. A., et al., "Light-Harvesting Polymer Systems," C&EN, pages 38-48 (March 15, 1993).	
13/	141	Fox, L. S., et al., "Gaussian Free-Energy Dependence of Electron-Transfer Rates in Iridium Complexes," Science, 247:1069-1071 (1990).	
134	142	Francois, J-C., et al., "Periodic Cleavage of Poly(dA) by Oligothymidylates Covalently Linked to the 1,10-Phenanthroline-Copper Complex," <i>Biochemistry</i> , 27:2272-2276 (1988).	
13/1	143	Friedman, A. E., et al., "Molecular 'Light Switch' for DNA: Ru(bpy) ₂ (dppz) ²⁺ ," <i>J. Am. Chem. Soc.</i> , 112:4960-4962 (1990).	
19Kz	144	Fromherz, P., et al., "Photoinduced Electron Transfer in DNA Matrix from Intercalated Ethidium to Condensed Methylviologen," <i>J. Am. Chem. Soc.</i> , 108:5361-5362 (1986).	
191	145	Gardner, et al., "Application of conducting polymer technology in microsystems," <i>Sensors and Actuators</i> , A51:57-66 (1995).	
	146	Gregg, B. A., et al., "Redox Polymer Films Containing Enzymes. 1. A Redox-Conducting Epoxy Cement: Synthesis, Characterization, and Electrocatalytic Oxidation of Hydroquinone," <i>J. Phys. Chem.</i> , 95:5970-5975 (1991).	
	147	Gregg, B. A., et al., "Cross-linked redox gels containing glucose oxidase for amperometric biosensor applications," <i>Anal. Chem.</i> , 62:258-263 (1990).	
Ph	148	Guschin, D. et al., "Manual Manufacturing of Oligonucleotide, DNA, and Protein Microchips," Analytical Biochemistry, 250:203-211 (1997).	
	149	Guschin, D. et al., "Oligonucleotide Microchips as Genosensors for Determinative and Environmental Studies in Microbiology," 63(6):2397-2402 (1997).	
196	150	Hashimoto, et al., "Sequence-Specific Gene Detection with a Gold Electrode Modified with DNA Probes and an Electrochemically Active Dye," <i>Anal. Chem.</i> 66:3830-3833 (1994).	
TH	151	Hegner, et al., "Immobilizing DNA on gold via thiol modification for atomic force microscopy imaging in buffer solutions," <i>FEBS</i> 336(3):452-456 (1993).	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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1/1/2	152	Heller, A., "Electrical Wiring of Redox Enzymes," Acc. Chem. Res., 23:128-134 (1990).							
Person	153	Heller et al., "Fluorescent Energy Transfer Oligonucleotide Probes," Fed. Proc. 46(6):1968 (1987) Abstract No. 248.							
ey.	154	Heller, A., et al., "Amperometric biosensors based on three-dimensional hydrogel-forming epoxy networks," <i>Sensors and Actuators</i> , 13-14:180-183 (1993).							
BALO	155	Ho "DNA-Mediated Electron Transfer and Application to 'Biochip'Development," Abstract. Office of Naval Research (Report Date: July 25, 1991) 1-4, RR04106.							
13/	156	Hobbs et al., "Polynucleotides Containing 2'-Amino-2'deoxyribose and 2'-Azido-2'-deoxyriose," Biochemistry, 12(25):5138-5145 (1973).							
PM.	157	Hsung, et al., "Thiophenol Protecting Groups for the Palladium-Catalyzed Heck Reaction: Efficient Syntheses of Conjugated Arylthiols," <i>Tetrahedron Letters</i> . 36(26):4525-4528 (1995).							
	158	Hsung, et al., "Synthesis and Characterization of Unsymmetric Ferrocene-Terminated Phenylethynyl Oligomers," <i>Organometallics</i> , 14:4808-4815 (1995).							
EX.	159	Jenkins et al., "A Sequence-Specific Molecular Light Switch: Tebhering of an Oligonucleotide to a Dipyridophenazine Complex of Ruthenium (II), J. Am. Chem. Soc., 114:8736-8738 (1992).							
BH	160	Johnston et al., "Trans-Dioxorhenium(V)-Mediated Electrocatalytic Oxidation of DNA at Indium Tin-Oxide Electrodes: Voltammetric Detection of DNA Cleavage in Solution," <i>Inorg. Chem.</i> , 33:6388-6390 (1994).							
101/2	161	Kamat et al., J. Phys. chem., 93(4):1405-1409 (1989). Abstract	П						
	162	Katritzky, et al., "Pyridylethylation - A New Protection Method for Active Hydrogen Compounds," Tetrahedron Letters, 25(12):1223-1226 (1984).							
	163	Kelley, S.O. and J.K. Barton, "Electrochemistry of Methylene Blue Bound to a DNA-Modified Electrode," <i>Bioconjugate Chem.</i> , 8:31-37 (1997).							
toll,	164	Kojima et al., "A DNA Probe of Ruthenium Bipyridine Complex Using Photocatalytic Activity," Chemistry Letter, pp 1889-1982 (1989).							
	165	Korri-Youssoufi et al., "Toward Bioelectronics: Specific DNA Recognition Based on an Oligonucleotide-Functionalized Polypyrrole," J. Am. Chem. Soc., 119(31):7388-7389 (1997).							
	166	Laviron, E., "A.C. Polarography and Faradaic Impedance of Strongly Adsorbed Electroactive Species. Part I: Theoretical and Experimental Study of a Quasi-Reversible Reaction in the Case of a Langmuir Isotherm," J. Electroanal. Chem., 97:135-149 (1979).							
Box,	167	Laviron, E., "A.C. Polarography and Faradaic Impedance of Strongly Adsorbed Electoactive Species. Part III: Theoretical Complex Plane Analysis for a Surface Redox Reaction," J. Electroanal. Chem., 105:35-42 (1979).							
Yell	168	Lee, et al., "Direct Measurement of the Forces Between Complementary Strands of DNA," Science, 266:271-773 (1994).							
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*EXAMINER: Initial reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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TOTAL	169	Lenhard, J.R., et al., "Part VII Covalent Bonding of a Reversible- Electrode Reactanbt to Pt Electrodes Using an organosilane Reagent" J. Electronal. Chem., 78:195-201 (1977).	
3340	170	Lincoln et al., "Shorting Circuiting the Molecular Wire," J. Am. Chem. Soc., 119(6)1454-1455 (1997).	
1/1/2/2	171	Lipkin "Identifying DNA by the Speed of Electrons," Science News, 147(8):117 (1995).	
131	172	Livshits, M. et al., "Theoretical Analysis of the Kinetics of DNA Hybridization with Gel-Immobilized Oligonucleotides," Biophysical Journal, 71:2795-2801 (1996).	
BA D	173	Maskos, et al., "Oligonucleotide hybridisations on glass supports: a novel linker for oligonucleotide synthesis and hybridisation properties of oligonucleotides synthesised <i>in situ</i> ," <i>Nucleic Acids Research</i> , 20(7):1679-1684 (1992).	
By J	174	McGee, et al., "2'-Amino-2'-deoxyuridine via an Intramolecular Cyclization of a Trichloroacetimidate," J. Org. Chem., 61:781-785 (1996).	
134	175	Meade, T. J., et al., "Electron Transfer through DNA: Site-Specific Modification of Duplex DNA with Ruthenium Donors and Acceptors," <i>Angew Chem. Int. Ed. Engl.</i> , 34:352-354 (1995).	
Bly	176	Meade, T. J., "Driving-Force Effects on the Rate of Long-Range Electron Transfer in Ruthenium-Modified Cytochrome c," J. Am. Chem. Soc., 111:4353-4356 (1989).	
704	177	Mestel, "Electron Highway' Points to Identity of DNA," New Scientist, p. 21 (1995).	
BA	178	Millan, K.M. and Mikkelsen, S.R., "Sequence-Selective Biosensor for DNA Based on Electroactive Hybridization Indicators," <i>Anal. Chem.</i> , 65:2317-2323 (1993).	
340	179	Millan, K.M., et al., "Covalent Immobilization of DNA onto Glassy Carbon Electrodes," Electroanalysis, 4(10):929-932 (1992).	
4949	180	Millan, et al., "Voltammetric DNA Biosensor for Cystic Fibrosis Based on a Modified Carbon Paste Electrode," <i>Anal. Chem.</i> , 66:2943-2948 (1994).	
191	181	Miller, C., "Absorbed ω-Hydroxy Thiol Monolayers on Gold Electrodes: Evidence for Electron Tunneling to Redox Species in Solution," <i>J. Phys. Chem.</i> , 95:877-886 (1991).	
931	182	Mirkin et al., "A DNA-based Method for Ratioally Assembling Nonoparticles into Macroscopic Materials," Nature, 382:607-609 (1996).	
120	183	Mirzabekov, A. et al., "Dna Sequencing by Hybridization - a Megasequencing Method and a Diagnostic Tool," Tibtech, 12:27-32 (1994).	
408	184	Mitchell et al., "Programmed Assembly of DNA Functionalized Quantum Dots," J. Am. Chem. Soc., 121:8122-8123 (1999).	
177			

Examiner Signature Date Considered 623/2003.

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include opp of this form with next communication to applicant.

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Olo	185	Mucic et al., "DNA-Directed Synthesis of Binary Nanoparticle Network Materials," J. Am. Chem. Soc., 120:12674-12675 (1998).	
Di	186	Murphy, C. J., et al., "Long-Range Photoinduced Electron Transfer Through a DNA Helix," <i>Science</i> , 262:1025-1029 (1993).	
100	187	Orellana, G., et al., "Photoinduced Electron Transfer Quenching of Excited Ru(II) Polypyridyls Bound to DNA: The Role of the Nucleic Acid Double Helix," <i>Photochemistry and Photobiology</i> , 54(4):499-509 (1991).	
	188	Palecek, "From Polarography of DNA to Microanalysis with Nucleic Acid-Modified Electrodes," Electroanalysis. 8(1):7-14 (1996).	
Polishing .	189	Parinov, S., "DNA Sequencing by Hybridization to Microchip octa- and Decanucleotides Extended by Stacked Pentanucleotides, "Nucleic Acids Research, 24(15):2998-3004 (1996).	
OHO	190	Paterson, "Electric Genes: Current Flow in DNA Could Lead to Faster Genetic Testing," Scientific American, 33 (May 1995).	
13 1.	191	Proudnikov, D. "Immobilization of DNA in Polyacrylamide Gel for the manufacture of DNA and DNA-Oligonucleotide Microchips," Analytical Biochemistry, 259:34-41 (1998).	
Oll,	192	Proudnikov, D. et al., "Chemical Methods of DNA and RNA Fluorescent Labeling," Nucleic Acids Research, 24(22):4535-4542 (1996).	
W.	193	Purugganan, M. D., et al., "Accelerated Electron Transfer Between Metal Complexes Mediated by DNA, Science, 241:1645-1649 (1988).	
BA)	194	Reimers et al., "Toward Efficient Molecular Wires and Switches: the Brooker Ions," Biosystems, 35:107-111 (1995).	
SALL,	195	Rhodes, D. And A. Klug, "Helical Periodicity of DNA Determined by Enzyme Digestion," <i>Nature</i> , 286:573-578 (1980).	
JOH ,	196	Risser, S. M., et al., "Electron Transfer in DNA: Predictions of Exponential Growth and Decay of Coupling with Donor-Acceptor Distance," J. Am. Chem. Soc., 115(6):2508-2510 (1993).	
W.	197	Sato, Y., et al., "Unidirectional Electron Transfer at Self-Assembled Monolayers of 11-Ferrocenyl-1-undecanethiol on Gold," <i>Bull. Chem. Soc. Jpn.</i> , 66(4):1032-1037 (1993).	
W.	198	Satyanarayana, S., et al., "Neither Δ - nor Λ -Tris(phenanthroline)ruthenium(II) Binds to DNA by Classical Intercalation," <i>Biochemistry</i> , 31(39):9319-9324 (1992).	
131	199	Schreiber, et al., "Bis(purine) Complexes of <i>trans</i> -a ₂ Pt ^{II} : Preparation and X-ray Structures of Bis(9-methyladenine) and Mixed 9-Methyladenine, 9-Methylguanine Complexes and Chemistry Relevant to Metal-Modified Nucelobase Triples and Quartets," <i>J. Am. Chem. Soc.</i> 118:4124-4132 (1996).	
	200	Schuhmann, W., et al., "Electron Transfer between Glucose Oxidase and Electrodes via Redox Mediators Bound with Flexible Chains to the Enzyme Surface," J. Am. Chem. Soc., 113:1394-1397 (1991).	
7			

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EX.	201	Schumm, et al., "Iterative Divergent/Convergent Approach to Linear Conjugated Oligomers by Successive Doubling of the Molecular Length: A Rapid Route to a 128 Å-Long Potential Molecular Wire," Angew. Chem. Int. Ed. Engl., 33(11):1360-1363 (1994).	
13Yn	202	Sigal et al., "A Self-Assembled Monolayer for the Binding and Study of Histidine-Tagged Proteins by Surface Plasmon Resonance," <i>Anal. Chem.</i> , 68(3):490-497 (1996).	
B(1)	203	Sloop et al., "Metalloorganic labels for DNA sequencing and mapping," New. J. Chem., 18: 317-326 (1994).	
BA	204	Southern, et al., "Arrays of complementary oligonucleotides for analysing the hybridisation behaviour of nucleic acids," <i>Nucleic Acids Research</i> , 22(8):1368-1373 (1994).	
3	205	Storhoff et al., "One-Pot Colorimetric Differentiation of Polynucleotides with Single Base Imperfections Using Gold Nanoparticles Probes," J. Am. Chem. Soc., 120:1959-1964 (1998).	
Blo	206	Strobel, S. A., et al., "Site-Specific Cleavage of a Yeast Chromosome by Oligonucleotide-Directed Triple-Helix Formation," <i>Science</i> , 249:73-75 (1990).	
9312	207	Su, et al., "Interfacial Nucleic Acid Hybridization Studied by Random Primer ³² P Labelling and Liquid-Phase Acoustic Network Analysis," <i>Analytical Chemistry</i> , 66(6):769-777 (1994).	
13/	208	Telser, J., et al., "DNA Oligomers and Duplexes Containing a Covalently Attached Derivative of Tris(2,2'-bipyridine)ruthenium(II): Synthesis and Characterization by Thermodynamic and Optical Spectroscopic Measurements," <i>J. Am. Chem. Soc.</i> , 111:7221-7226 (1989).	
13/	209	Telser, J., et al., "DNA Duplexes Covalently Labeled at Two Sites: Synthesis and Characterization by Steady-State and Time-Resolved Optical Spectroscopies," <i>J. Am. Chem. Soc.</i> , 111:7226-7232 (1989).	
	210	Timofeev, E. et al., "Regioselective Immobilization of Short Oligonucleotides to Acrylic Copolymer Gel," Nucleic Acids Research, 24(16): 3142-3148 (1996).	
19/1	211	Timofeev, E. et al., "Methidium Intercalator Inserted into Synthetic Oligonucleotides," Tetrahedron Letters, 37(47):8467-8470 (1996).	
191	212	Tour, "Conjugated Macromolecules of Precise Length and Constitution. Organic Synthesis for the Construction of Nanoarchitectures," <i>Chem. Rev.</i> , 96:537-553 (1996).	
Al,	213	Tour, et al., "Self-Assembled Monolayers and Multilayers of Conjugated Thiols, α-ω-Dithiols, and Thioacetyl-Containing Adsorbates. Understanding Attachments between Potential Molecular Wires and Gold Surfaces," J. Am. Chem. Soc., 117:9529-9534 (1995).	
13/	214	Tullius, T.D. and B.A. Dombroski, "Iron(II) EDTA Used to Measure the Helical Twist Along Any DNA Molecule," <i>Science</i> , 230:679-681 (1985).	
BN	215	Turro, N. J., et al., "Molecular Recognition and Chemistry in Restricted Reaction Spaces. Photophysics and Photoinduced Electron Transfer on the Surfaces of Micelles, Dendrimers, and DNA," Acc. Chem. Res., 24:332-340 (1991).	
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	Filing Date	January 11, 2001
1	First Named Inventor	Duong, H.
	Group Art Unit	1645
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	A-68718-2/RFT/RMS/RMK

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POST	216	Turro, N., et al. "Photoelectron Transfer Between Molecules Adsorbed in Restricted Spaces," Photochem. Convers. Storage Sol. Energy, Proc. Int. Conf., 8th, pp 121-139 (1990).			
BA	217	Uosake, K., et al., "A Self-Assembled Monolayer of Ferrocenylalkane Thiols on Gold as an Electron Mediator for the Reduction of Fe(III)-EDTA in Solution," <i>Electrochemica Acta.</i> , 36(11/12):1799-1801 (1991).			
GA.	218	Van Ness, J., et al., "A Versatile Solid Support System for Oligodeoxynucleotide Probe-Based Hybridization Assays," <i>Nucleic Acids Research</i> , 19(12):3345-3350 (1991).			
921	219	Velev et al., "In Situ Assembly of Colloidal Particles into Miniaturized Biosensors," The ACS Journal of Surfaces and Colloids, Langmuir, 15(11):3693-3698 (1999).			
PA	220	Watson et al., "Hybrid Nanoparticles with Block Copolymer Shell Structures," J. Am. Chem. Soc., 121:462-463 (1999).			
BA	221	Weber, et al., "Voltammetry of Redox-Active Groups Irreversibly Adsorbed onto Electrodes. Treatment Using the Marcus Relation between Rate and Overpotential," <i>Anal. Chem.</i> , 66:3164-3172 (1994).			
Bl.	222	Williams, et al., "Studies of oligonucleotide interactions by hybridisation to arrays: the influence of dangling ends on duplex yield," <i>Nucleic Acids Research</i> , 22(8):1365-1367 (1994).			
feet	223	Winkler, J. R., et al., "Electron Transfer in Ruthenium-Modified Proteins," <i>Chem. Rev.</i> , 92:369-379 (1992).			
Al	224	Xu, et al., "Immobilization and Hybridization of DNA on an Aluminum(III) Alkanebisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," <i>J. Am. Chem. Soc.</i> , 117:2627-2631 (1995).			
BEO.	225	Xu, et al., "Immobilization of DNA on an Aluminum(III) alkaneobisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 116:8386-8387 (1994).			
Pak o	226	Yang, et al., "Growth and Characterization of Metal(II) Alkaneobisphosphonate Multilayer Thin Films on Gold Surfaces," J. Am. Chem. Soc., 115:11855-11862 (1993).			
MI (7227	Yershov, G. et al., "DNA Analysis and Diagnostics on Oligonucleotide Microchips," Proc. Natl. Acad. Sci. USA, 93:4913-4918 (1996).			
<i>79</i> }.	228	Zhou, et al., "Fluorescent Chemosensors Based on Energy Migration in Conjugated Polymers: The Molecular Wire Approach to Increased Sensitivity," J. Am. Chem. Soc., 117:12593-12602 (1995).			
10/3	229	Boon et al., "Mutation Detection by Electrocatalysis at DNA- Modified Electrodes," Nature Biotechnology, 18: 1096-1100 (October 2000).			
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131	230	Hess et al., "Base Pairing Properties of Novel Transition Metal PNA Conjugates," Journal of Inorganic Biochemistry, 74:161 (1999).					
GJ)	231	Mucic et al., "Synthesis and Characterization of DNA with Ferrocenyl Groups Attached to their 5'- Termini: Electrochemical Characterization of a Redox-Active Nucleotide Monolayer," <i>Chem. Commun.</i> , pp. 555-557 (1996).					
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